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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ROBERT B. FOSTER JR.

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EXAMINER

YAO, KWANG BIN

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/434,832

Applicant(s)

FOSTER ET AL.

Examiner

Kwang B. Yao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-90 is/are pending in the application.
- 4a) Of the above claim(s) 22-90 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 15 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Invention I in the reply filed on 9/20/04 is acknowledged. The traversal is on the ground(s) that ones of the Groups are not in a combination/subcombination relationship. This is not found persuasive because the following reasons.

On page 3, second paragraph, Applicant argues that "The Office Action, in applying the two way distinction test, has stated that Group I has a separate utility from Group II, and that Group I also has a separate utility from each of Groups III-VII; the examiner makes no attempt to apply the test to any of the other Groups". Examiner respectfully disagrees with these arguments. It appears that Applicant misunderstands the previous Office Action, because nowhere in the previous office action states that Group I has a separate utility from Group II, and that Group I also has a separate utility from each of Groups III-VII. As stated in office action, it only states that the subcombinations of Groups II-VII have separate utilities, rather than the argued features of "Group I has a separate utility from Group II, and that Group I also has a separate utility from each of Groups III-VII".

On page 3, third paragraph, Applicant argues that Group I is generic to Group II; Group I is directed to a communication hub and its scope of utility encompasses utility as a communication hub for an adaptive TDMA system of Group II; therefore, two way distinctness does not exist with respect to Groups I and II; and therefore the restriction requirement should be withdrawn and Groups I and 11 examined. Examiner respectfully disagrees with these

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arguments. As stated in the previous Office Action, Group I does not require the particulars of Group II for patentability, and Group II has separate utility of adaptively adjusting a portion of TDMA associated with the forward channel information and the reverse channel information. Therefore, it is respectfully submitted that the two-way distinctness does exist and the restriction is proper.

On page 3, fourth paragraph, Applicant argues that the Office Action has provided no arguments demonstrating Groups III-VI are separate and distinct from each other; the Office Action only provides arguments of how Groups III-VI have a separate utility from Group I; therefore, the restriction requirement regarding Groups III-VI are improper and must be withdrawn. Examiner respectfully disagrees with these arguments. As stated in the previous Office Action, it provides not only the arguments of how Groups III-VI have a separate utility from Group I, but also of how Groups II-VI have a separate utility among each other. Therefore, it is respectfully submitted that the restriction is proper.

On page 4, first paragraph, Applicant argues that Groups III-VI, while having a combination-subcombination relationship with Groups I and II, do not have a combination-subcombination relationship between themselves, and thus the restriction requirement is improper. Examiner respectfully disagrees with these arguments. Regarding MPEP § 806.05(c), it does not require the subcombinations, such as Groups III-VI, have a combination subcombination relationship between themselves. Rather, it states that the restriction is proper if two-way distinctness is demonstrated, which described in details in the last Office Action. Therefore, it is respectfully submitted that the restriction is proper.

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On page 4, second paragraph, Applicant argues that Groups III, V and VI are directed to adaptive TDD communications systems and the scope of each of the Groups includes a common utility of providing TDD communications, including routing and providing variable density, and thus defeat two way distinctiveness. Examiner respectfully disagrees with these arguments.

Combination Group I does not require the particulars of Groups III, V, VI for patentability.

Moreover, Group III has separate utility of providing a CPU for determining the routing of bursty data and providing signals for synchronizing the periods of transmission and reception; Group V has separate utility of assigning bandwidth such that the frequency of communication between the hub and nodes is about 10 GHz and about 60 GHz, and the bandwidth of the communication between the hub and nodes is at least 10MHz, and the beam width of the hub antennas is wider than the beam width of the node antennas by a factor of at least eight; Group VI has separate utility of selectively connect the modem to a plurality of transceiver/directional antenna combinations. Therefore, it is respectfully submitted that the two-way distinctness does exist and the restriction is proper.

On page 4, third paragraph, Applicant argues that Group IV is directed to an adaptive TDD communications system where the data within the frame is variable; Group IV also has the common utility of providing TDD communications, again defeating two way distinctness required for a combination subcombination relationship. Examiner respectfully disagrees with these arguments. Combination Group I does not require the particulars of Groups IV for patentability. Moreover, Group IV has separate utility of varying data density as a function of parameters consisting of a signal error rate, a signal to noise ratio, a signal to interference ratio, a

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signal power level, and a signal propagation delay. Therefore, it is respectfully submitted that the two-way distinctness does exist and the restriction is proper.

The requirement is still deemed proper and is therefore made FINAL.

2. This application contains claims drawn to an invention nonelected with traverse in the reply filed on 9/20/04. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, lines 2-3, the limitations of “wherein said first and second groups are not mutually exclusive” are indefinite. The claimed first and second groups are mutually exclusive when there is only one antenna included in the first group and second group.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1, 3, 7, 10, 11, 16, 17, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Dent (US 6,151,310).

Dent discloses a communication system comprising the following features: regarding claim 1, a communication hub (Fig. 1, base station 23) for providing information communication between a plurality of locations, said communication hub (Fig. 1, base station 23) comprising: a first radio frequency modem (Fig. 9, MODULATOR 323) providing a first signal; a plurality of hub antenna units (Fig. 9, antenna elements 224), each hub antenna unit (Fig. 9, antenna element 224) having a predetermined radiation pattern to provide directional communication (column 8, lines 30-43), each hub antenna unit (Fig. 9, antenna element 224) adapted for air link communication in a frequency band of the millimeter wave spectrum of frequencies, said plurality of hub antenna units (Fig. 9, antenna elements 224) including a first group having at least one hub antenna unit (Fig. 9, antenna element 224) associated therewith; and switching means (Fig. 9, RF SWITCH MATRIX 319) for switchably connecting said first group to said first signal, said switching means (Fig. 9, RF SWITCH MATRIX 319) providing said first group time division multiple access to said first signal (column 9, lines 10-27); regarding claim 3, wherein a first set of hub antenna units (Fig. 9, antenna elements 224) of said plurality of antenna

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unit (Fig. 9, antenna element 224)s are adapted to communicate via a first frequency band of the millimeter wave spectrum of frequencies, and a second set of hub antenna units (Fig. 9, antenna elements 224) of said plurality of antenna unit (Fig. 9, antenna element 224)s are adapted to communicate via a second frequency band of the millimeter wave spectrum of frequencies (column 9, lines 10-27); regarding claim 7, wherein said first signal is time divided to include a plurality of information bursts (column 9, lines 10-27); regarding claim 10, wherein said switchable connection is accomplished according to a predefined regimen (Fig. 12, column 10, lines 45-67) to provide time division multiple access of said first signal to said first group of antenna units (Fig. 9, antenna elements 224); regarding claim 11, wherein said predefined regimen is determined at least in part by an attribute of said communication (column 11, line 16 to column 12, line 18) provided by ones of said plurality of antenna units (Fig. 9, antenna element 224); regarding claim 16, wherein said hub is disposed to provide communication in a predefined cell of a cellular overlay pattern including a plurality of communications hubs (column 7, line 36 to column 8, line 29); regarding claim 17, wherein said hub is coupled to at least one hub of said plurality of hubs via a communications backbone (Fig. 1, Public Switched network 30); regarding claim 19, wherein said hub is in information communication with at least one hub of said plurality of hubs (Fig. 1, base stations 23) via an air link provided at least in part by an antenna unit (Fig. 9, antenna element 224) of said plurality of antenna units (Fig. 9, antenna elements 224).

Claim Rejections - 35 USC § 103

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,151,310) in view of Campanella (US 5,835,487).

Dent discloses the claimed limitations above. Dent does not disclose the following features: regarding claim 2, a second group having at least one hub antenna associated therewith, wherein said first and second groups are not mutually exclusive; and a second radio frequency modem providing a second signal, and said switching means further comprise means for switchably connecting said second group to said second signal, said switching means providing said second group time division multiple access to said second signal; regarding claim 4, wherein said hub is adapted to accept the coupling of an individual antenna unit thereto, said coupled individual antenna unit thereby becoming a hub antenna of said plurality of hub antennas units; regarding claim 5, wherein said coupled individual antenna unit is disposed to provide directional communication to an area previously not within a composite antenna unit radiation pattern provided by said communication hub; regarding claim 6, wherein said coupled individual antenna unit is disposed to provide directional communication to an area previously within a composite antenna unit radiation pattern provided by said communication hub, said coupled individual antenna unit being adapted to provide increased communication capacity in said area.

Campanella discloses a communication system comprising the following features: regarding claim 2, a second group having at least one hub antenna (Fig. 3, L BAND TRANSMIT

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ANTENNAS 49) associated therewith, wherein said first and second groups are not mutually exclusive; and a second radio frequency modem (FIG. 3, MODULAOTR 45; FIG. 4, MOD 58) providing a second signal, and said switching means (FIG. 3, ROUTING SWITCH 45) further comprise means for switchably connecting said second group to said second signal, said switching means (FIG. 3, ROUTING SWITCH 45) providing said second group time division multiple access (FIG. 2, TDM SYMBOL STREAM) to said second signal; regarding claim 4, wherein said hub is adapted to accept the coupling of an individual antenna unit thereto (column 9, lines 10-53), said coupled individual antenna unit thereby becoming a hub antenna (Fig. 3, L BAND TRANSMIT ANTENNAS 49) of said plurality of hub antennas (Fig. 3, L BAND TRANSMIT ANTENNAS 49) units; regarding claim 5, wherein said coupled individual antenna unit is disposed to provide directional communication to an area previously not within a composite antenna unit radiation pattern provided by said communication hub (column 9, lines 10-53); regarding claim 6, wherein said coupled individual antenna unit is disposed to provide directional communication to an area previously within a composite antenna unit radiation pattern provided by said communication hub, said coupled individual antenna unit being adapted to provide increased communication capacity in said area (column 9, lines 10-53). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Dent, by using the features, as taught by Campanella, in order to provide a high quality radio channels accessible to people worldwide. See Campanella, column 1, lines 40-42.

8. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,151,310) in view of Anderson et al. (US 6,112,080).

Dent discloses the claimed limitations above. Dent does not disclose the following features: regarding claim 8, wherein said plurality of information bursts include a set of forward channel information bursts and a set of reverse channel information bursts, said forward and reverse channel information bursts each defined to comprise a percentage of said plurality of information bursts, which together represent 100%; regarding claim 9, wherein said forward channel and said reverse channel percentages are selected from the group consisting of approximately 94% forward channel information bursts and approximately 6% reverse channel information bursts; approximately 50% forward channel information bursts and approximately 50% reverse channel information bursts; and approximately 6% forward channel information bursts and approximately 94% reverse channel information bursts.

Anderson et al. discloses a communication system comprising the following features: regarding claim 8, wherein said plurality of information bursts include a set of forward channel information bursts and a set of reverse channel information bursts, said forward and reverse channel information bursts each defined to comprise a percentage of said plurality of information bursts, which together represent 100% (Fig. 2; column 8, lines 36-52); regarding claim 9, wherein said forward channel and said reverse channel percentages are selected from the group consisting of approximately 94% forward channel information bursts and approximately 6% reverse channel information bursts; approximately 50% forward channel information bursts and approximately 50% reverse channel information bursts; and approximately 6% forward channel information bursts and approximately 94% reverse channel information bursts (Fig. 2; column 8, lines 36-52). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Dent, by using the features, as taught by Anderson et al., in

order to provide a simple and flexible over-air protocol for use in a mobile telephone system.

See Anderson et al., column 1, lines 48-50.

9. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,151,310) in view of Webb (US 5,828,695).

Dent discloses the claimed limitations above. Dent does not disclose the following features: regarding claim 12, wherein said first modem is dynamically configurable to provide variable information density within said first signal; regarding claim 13, wherein said variable information density includes quadrature amplitude modulation of an input signal; regarding claim 14, wherein said variable information density is dynamically configured at least in part as a function of an attribute of said communication provided by ones of said plurality of antenna units. Webb discloses a communication system comprising the following features: regarding claim 12, wherein said first modem is dynamically configurable to provide variable information density within said first signal (Abstract; and column 3, lines 7-10); regarding claim 13, wherein said variable information density includes quadrature amplitude modulation of an input signal (column 3, lines 15-67); regarding claim 14, wherein said variable information density is dynamically configured at least in part as a function of an attribute (Abstract, bit error rate; and column 1, lines 60-65) of said communication provided by ones of said plurality of antenna units. It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Dent, by using the features, as taught by Webb, in order to provide an efficient data communication system by reducing the problem of fast fading and allowing the transmission of more symbols before the channel changes significantly. See Webb, column 2, lines 32-34.

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10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,151,310) in view of Moura et al. (US 5,586,121).

Dent discloses the claimed limitations above. Dent does not disclose the following features: regarding claim 18, wherein said communications backbone is selected from the group consisting of a public switched network; a cable communication network; a broadband data grade connection; and the Internet. Moura et al. discloses a communication system comprising the following features: regarding claim 18, wherein said communications backbone is selected from the group consisting of a public switched network (PSTN); a cable communication network (Cable TV network); a broadband data grade connection (ISDN); and the Internet (Fig. 1, Internet 20). See column 1, line 64 to column 2, line 9. It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Dent, by using the features, as taught by Moura et al., in order to an efficient data communication by developing a network which combines the flexibility of a full-duplex network with effectiveness of a broadcast network at a reasonable cost. See Moura et al., column 1, lines 28-31.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,151,310) in view of Herman (US 5,008,678).

Dent discloses the claimed limitations above. Dent does not disclose the following features: regarding claim 20, wherein said frequency band of the millimeter wave spectrum of frequencies is within 10 to 60 GHz. Herman discloses an electronically scanning vehicle radar sensor comprising the following features: wherein said frequency band of the millimeter wave spectrum of frequencies is within 10 to 60 GHz (column 3, lines 13-18). It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of

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Dent, by using the features, as taught by Herman, in order to provide a more flexible system.

See Herman, column 1, lines 61-68.

Allowable Subject Matter

12. Claims 15 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Langston (US 6,006,069) discloses a point-to-multipoint communications system.

Charas et al. (US 5,548,813) discloses a phased array cellular base station.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang B. Yao whose telephone number is 571-272-3182. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KWANG BIN YAO
PRIMARY EXAMINER



Kwang B. Yao
February 21, 2005